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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,210	11/22/1999	JON TSCHUDI	2036-170	7676

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EXAMINER

LAROSE, COLIN M

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/424,210

Applicant(s)

TSCHUDI, JON

Examiner

Colin M. LaRose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5,6,8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Amendments

1. Applicants' amendments filed 22 November 1999, have been entered and made of record.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 6, the phrase "or the like" renders the claims indefinite because the claims include elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claims unascertainable. See MPEP § 2173.05(d). Also, an improper period occurs after "surface" in line 22, claim 1 and line 19, claim 6.

Claim 1 recites the limitations "said line of sensors" and "said at least one sensor" in lines 20-21. There is insufficient antecedent basis for these limitations in the claim.

Further in regards to claim 6, the phrase "e.g." renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claims 4, 13, and 14, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention.

Claims 2-5 and 7-12 are rejected for dependence on claims 1 and 6.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6, 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,289,114 by Mainguet and U.S. Patent 4,784,484 by Jensen.

Regarding claims 1 and 6, Mainguet discloses a method for the measuring of structures in a fingerprint, comprising the measuring of chosen characteristics (column 4, lines 54-56: characteristics are capacitive pattern of ridges and hollows) of the fingerprint using a sensor array (figure 3) comprising a plurality of sensors, being positioned in contact with (figure 2), or close to, a portion of the surface, comprising

measuring of said characteristics in at least one line of measuring points (figure 3: measuring points 22) along an elongated portion of the surface at given intervals of time (column 7, lines 56-57: images are created at different time intervals), the sensor array being an essentially one-dimensional array (column 4, lines 62-64: one row of sensitive elements or column 5, lines 19-20: preferably, number of rows is as small as possible),

measuring said characteristics using at least one measuring point being positioned at a chosen distance from said line of measuring points in a direction perpendicular to the axis of the line (column 5, lines 44-50: said at least one measuring point is contained in the second row of points at a perpendicular distance of 50 μm from said line),

moving the surface in relation to the sensor array in a direction perpendicular to the sensor array (figure 2 and column 8, lines 1-4), so that the measurements are performed at different, or partially overlapping, portions of the surface (column 5, lines 33-34 and figure 12), and, from said measurements at said line of sensors and said at least one sensor, calculating said movement (figure 10: the overlap, Z_n , between successive images I_1 and I_0 is iteratively calculated; the width of Z_n provides a measure of the relative amount of movement of the finger in relation to the sensor array for two successive fingerprint images),

combining the measurements of the measured portions of the surface to provide a segmented, two-dimensional representation of said characteristics of the surface (figures 11 and 12), characterized in that the sensors are capacitive sensors (column 4, lines 53-57) separated from the surface with a thin insulating film (column 6, lines 55-59 and figure 3: plastic layer 30 separates sensors from surface) said sensors being adapted to measure variations in the capacitance along the sensor array and the capacitive coupling through the insulating layer (column 4, line 55: sensors pick up the pattern of capacitance of the surface through the insulating layer 30 in figure 3; that is, the sensors measure the capacitive coupling (electrical charges) of the electrodes 28 formed by induction introduced by the surface).

Mainguet is silent to a varying voltage being applied to the surface to be measured using an electrode being placed separate from the sensor array.

Jensen discloses a similar method for scanning fingerprints wherein the finger moves in relation to the sensor array. Jensen teaches that a 10 kHz voltage is applied to wires C and D, which make contact with the surface 2 and which are separate from the sensor array 10 (column 3, lines 41-43 and figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mainguet by Jensen to apply a varying voltage to the surface separate from the sensor array, since Jensen teaches that adding a varying voltage to the surface can avoid noise and hum problems (column 3, line 43).

Regarding claim 2, Mainguet discloses that the measuring points of the array are essentially equally spaced along said essentially one-dimensional array (column 5, lines 44-45).

Regarding claim 3, both Mainguet and Jensen disclose or suggest adjusting the interval of the measurements according to movement in order to obtain at least one measurement of each portion of the surface (Mainguet column 5, lines 64-67: increasing the reading frequency allows for faster movement of the finger in relation to the sensors to get at least one measurement of each portion and preferably more than one measurement (overlapping: column 5, lines 33-34). Jensen column 3, lines 25-27: the rate of movement between the finger and the sensors is used to synchronize the scanning; that is, Jensen adjusts the scan rate based on the rate of movement to get at least one measurement of each portion).

Regarding claim 7, Mainguet discloses that the essentially one-dimensional sensor array comprises two or more parallel lines of essentially equally spaced sensors, said at least one sensor being comprised in said array (column 5, lines 44-49: uniform distance between sensors and 40 rows of sensors).

Regarding claim 9, Mainguet's system includes a device for finding the movement of the surface in relation to the sensor array (figure 10: the overlap, Z_n , between successive images I_1 and I_0 is iteratively calculated; the width of Z_n provides a measure of the relative amount of movement of the finger in relation to the sensor array for two successive fingerprint images).

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Regarding claim 10, Mainguet discloses means for comparing the signals from the different lines of sensors to find the time lapse or spatial shift between the similar structures at different sensor lines (figures 8-10: two successive signals from the sensors, I1 and I0, are compared to iteratively find the spatial shift Z_n).

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mainguet and Jensen in view of U.S. Patent 5,864,296 by Upton.

Regarding claim 11, Mainguet shows the conductors in the sensor array being placed essentially normal to the surface to be measured (the vertical axes of electrodes 28, figure 3 are normal to the scanning surface 11, figure 2).

Mainguet is silent to one or more planes of constant voltage being placed close to and parallel to the conductors, extending essentially to the insulating layer.

Upton teaches placing a plane of constant voltage close to and parallel to the conductors, extending essentially to the insulating layer (element 26, figure 1: constant negative voltage is applied to conducting layer 22; figure 4 shows that the conducting layer 22 extends essentially into the insulating layer 24, and therefore the plane of voltage extends into the insulating layer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mainguet and Jensen by Upton to place a plane of constant voltage close to and parallel to the conductors since Upton teaches that a fingertip coming into contact with the conductors 22 having a uniform voltage creates voltage drops representative of the resistive characteristics of the human skin (column 4, lines 54-63) and are used as said measurements of surface characteristics.

7. Claim 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mainguet, Jensen, Upton, and U.S. Patent 5,559,504 by Itsumi et al. ("Itsumi").

Regarding claim 12, Mainguet discloses the use of pressure sensors (column 4, lines 45-48).

Mainguet is silent to the sensors also comprising electrodes being capable of measuring variations in the electric resistance along the sensor array.

Itsumi discloses a pressure sensor that measures the change in resistance between electrodes when a finger touches a pressure-sensitive sheet (see Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mainguet, Jensen, and Upton to include electrodes capable of measuring variations of resistance along a sensor array, since Mainguet discloses the use of pressure sensors, and Itsumi teaches that pressure sensors operate by measuring variations of resistance along an array of sensors.

Regarding claim 13, Mainguet does not endorse the use of optical detectors, however, it would have been obvious to use optical detectors to detect the surface of a finger based on Mainguet disclosing that the use of optical devices was conventional in art for receiving images of a fingerprint (column 1, lines 27-41). Also, Jensen discloses the sensors comprising optical detectors (column 3, line 12).

Regarding claim 14, Mainguet discloses that the sensor array is made of silicon (column 6, line 33).

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8. Claims 4 and 5, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mainguet and Jensen in view of U.S. Patent 4,394,773 by Ruell.

Regarding claim 4, Mainguet discloses that each measurement of the characteristics of an elongated portion of the surface comprises essentially simultaneous measuring of said characteristics along at least two lines of measuring points, one of which comprising said at least one measuring point (figure 5 and column 7, lines 56-57: the at least two lines of measuring points measure the characteristics essentially simultaneously to produce 2-D measurements $t_0 \dots t_n$ corresponding to instants $I_0 \dots I_n$),

the sensor array comprising two or more essentially parallel lines of essentially equally spaced sensors (column 5, lines 44-45: uniform distance between consecutive sensors), shifted in the longitudinal direction of the array (column 5, lines 48-50: there are 40 lines of sensors in the array, which are shifted longitudinally with respect to each other).

Regarding claim 8 and further in regards to claim 4, Mainguet is silent to each line of measuring points being shifted in the longitudinal direction with a distance not equal to the distance between the measuring points.

Ruell discloses a similar sensor that operates with non-optical sensors. In particular, Ruell shows an embodiment wherein the distance between sensing elements 22 is not equal to the longitudinal distance between sensor rows as illustrated in figure 11.

It would have been obvious to one of ordinary skill in the art at the time of the invention to align the sensors such that the distance between the sensing elements is unequal to the distance between the rows of sensing elements, since Ruell shows that this configuration achieves

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substantially the same results as Mainguet's configuration in that a measurement of fingerprint characteristics can be successfully captured.

Regarding claim 5, Mainguet discloses that the movement is measured by correlating the measurements from different measuring lines in order to find the time lapse or spatial shift between the similar structures at different lines of measuring points (figures 8-10: two successive measurements, I1 and I0, are correlated to iteratively find the spatial shift Z_n).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489. The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (703) 306-0377.

JOSEPH MANCUSO
PRIMARY EXAMINER

CML

Group Art Unit 2623

24 September 2002